CALS TEST NETWORK

AFCTN Test Report 93-065

AFCTB-ID 93-022

19960822 191

Technical Publication Transfer

Using

Northrop Corporation Data

MIL-D-28000A (IGES)
MIL-D-28001A (SGML)
MIL-R-28002A (Raster)
MIL-D-28003A (CGM)

Quick Short Test Report

16 April 1993

Prepared for

Electronic Systems Center

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Quick Short Test Report

16 March 1993

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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develope increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Northrop Corporation's interpretation and use of the CALS standards in transferring technical publication data. Northrop used their CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 93-022

Date of Evaluation: 16 March 1993

Evaluator:
George Elwood
Air Force CALS Test Bed
HQ ESC/ENCP
4027 Colonel Glenn Hwy
Suite 300
Dayton, OH 45431-1672

Data Originator:
John Kent
Northrop Corporation
B-2 Division
L591/GK
8900 E. Washington Blvd
Pico Rivera, CA 90660-3765
(310) 948-0624

Data Description: Technical Manual Test
- 2 Document Declaration files
- 2 Document Type Definition (DTD)
- 2 Output Specifications (OS)
- 1 Initial Graphics Exchange Specification (IGES) file
- 2 Text files
- 1 Raster file
- 1 Computer Graphics Metafile (CGM) file

Data Source System:

IGES

HARDWARE
Unknown

SOFTWARE
Unknown

Text/Standard Generalized Markup Language (SGML)

HARDWARE

Unknown

SOFTWARE

Unknown

Raster

HARDWARE

Unknown

SOFTWARE

Unknown

CGM

HARDWARE

Unknown

SOFTWARE

Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

AFCTN *Tapetool v1.2.8 UNIX*
Texas Instruments (TI) *Tapetool v1.0.1*
XSoft *CAPS/CALS v40.4*

MIL-D-28000 (IGES)

Sun SparcStation 2

ArborText *iges2draw*
IGES Data Analysis (IDA) *Parser/Verifier v92*
IDA *IGESView v3.05*
International TechneGroup Incorporated (ITI) *IGES/Works v1.3*

Cheetah Gold 486

AUTODESK *AutoCAD 386 R12*
Cadkey *Cadkey v5.02*

MIL-M-28001 (SGML)

Cheetah Gold 486

Exoterica *XGMLNormalizer v1.2e3.2*
McAfee & McAdam *Sema Mark-it v2.2.2*
Public Domain *sgmls*

MIL-R-28002 (Raster)
SUN SparcStation 2
AFCTN *validg4*
AFCTN *calstb.475*

MIL-D-28003 (CGM)
SUN SparcStation 2
AFCTN *validcgm*
Cheetah Gold 486
Advanced Technology Center
(ATC) *MetaCheck R 2.05*

Standards Tested:
MIL-STD-1840A
MIL-D-28000A
MIL-M-28001A
MIL-R-28002A
MIL-D-28003

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was not enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.8* utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using TI's version of *Tapetool* without reported error.

The tape was also read using XSoft *CAPS read1840A* utility without reported error.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration File or data file headers on the tape using the AFCTN *Tapetool*. When the data files were being evaluated using the TI version of *Tapetool*, a Core Dump was generated at the start

of the parsing operation on the second document.

This portion of the tape meets the CALS MIL-STD-1840A requirements.

4. IGES Analysis

The IGES file was evaluated using IDA's *Parser* and *Verify* utilities set for CALS Class I. No errors were reported.

The AFCTB has several tools for viewing IGES files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The IGES file was read into IDA's *IGESView* without a problem. The image displayed and printed correctly.

The file was read into ITI's *IGESWorks* without a problem. The image displayed and printed without a problem.

The file was converted using ArborText's *iges2draw* utility without a reported error. When the file was read into Island Graphics' *IslandDraw* only the right part of the image was displayed and printed.

The IGES file meets the CALS MIL-D-28000A specification.

5. SGML Analysis

5.1 Document One

The tape contained two DTDs, two text files, and two output specifications.

The DTD from the first document set was evaluated using Exotercia's *XGMLNormalizer*. The short, unique DTD would not parse on the first attempt. The ISO capacities file had to

be modified to add GRPCNT of 100. If capacities larger than defined in MIL-M-28001A are used, they should be included with the document. This permitted the file to parse without error. Using the generated file, the text file was parsed. Over 300 errors were reported during this procedure. The errors were basically four types which were generated on every two lines in the text file.

The DTD element viewdef was defined as shown below. Also note the definition of viewport. Note that viewport has a required attribute of NAME.

```
<!ELEMENT viewdef - o (viewport)+>

<!ELEMENT viewport - o EMPTY>
<!ATTLIST viewport
          name              ID       #REQUIRED
          viewstyleid       NMTOKEN  #IMPLIED
          coord             CDATA    #IMPLIED>
```

Shown below is the first five lines in the text file. Note that viewport is not used while viewdef is. In the text file viewdef was an attribute of name which is not defined in the DTD. Viewport is not used but it must be used with a required attribute of NAME.

```
<doc branch="af"
        fosicite="afto22">
<front>
<viewdef name="F0" coord="0 9600 8000 10000" vpflood="white">
<all viewpa="F0">
```

Shown below are the first four reported errors in the parser log.

```
C:\XGML\XGMLNORM.EXE --
Error on line 4 in file i:\9322\d001t001:
Undeclared attribute specification.
For start tag 'VIEWDEF': Unknown attribute is 'NAME'.
No attributes are allowed for the element 'VIEWDEF'.

C:\XGML\XGMLNORM.EXE --
Error on line 5 in file i:\9322\d001t001:
```

```
A start tag is missing that must not be omitted.
The element is 'VIEWPORT'.

C:\XGML\XGMLNORM.EXE --
Error on line 5 in file i:\9322\d001t001:
A REQUIRED attribute is missing.
For start tag 'VIEWPORT': For REQUIRED ID attribute 'NAME'.

C:\XGML\XGMLNORM.EXE --
Error on line 5 in file i:\9322\d001t001:
Undeclared attribute specification.
For start tag 'A11': Unknown attribute is 'VIEWPA'.
No attributes are allowed for the element 'A11'.
```

Similar errors were reported when using the Public Domain parser *sgmls* and McAfee & McAdam's *Sema Mark-it* parser.

5.2 Document Two

The second document had a "normal" DTD and text file. The first pass through the document using the Exoterica *XGML-Normalizer* parser generated two errors. The first error was the use of a public entity set that is not defined in MIL-M-28002 and not available in the AFCTB. This statement was commented out. Use of non-standard entity sets should be avoided. If used, they must be included with the document.

```
<!ENTITY % PUBspc PUBLIC "ISO 8879-1986//ENTITIES Tech Pubs Special
Characters//EN">
```

The parser also reported an ambiguous content model.

```
C:\XGML\XGMLNORM.EXE -- Error on line 466 in file
entities/93222.dtd:
A content model is ambiguous.
For element 'TOC'.
The input is 'CONTENTSENTRY'.
<!-- The document prolog is in error. -->
```

The element on the defined line had **contentsentry** on the

line twice. When the line was changed to reflect only one, no errors were reported.

```
<!ELEMENT toc          - o (contentsentry*,contents?,table?)  >
<!-- line above replacing below
<!ELEMENT toc          - o
(contentsentry*,contents?,table?,contentsentry*)  > -->
```

The Public Domain *sgmls* and McAfee & McAdam's *Sema Mark-it* parsers also reported similar errors.

When the text file was parsed four errors were reported. All of these errors are the same. See the Appendix for this log.

The DTDs and text files do not meet the CALS MIL-M-28001A specification.

6. Raster Analysis

The Raster file on the tape was a Type II file which cannot be processed by the AFCTB.

7. CGM Analysis

The tape included one CGM file. This file was checked using ATC's *MetaCheck* with CALS options. This program reported the file was not a CGM file.

The file was checked using the AFCTN *validcgm* utility which also reported the file was not a CGM file.

An octal dump was made of the file and defined CGM components were not found.

The CGM file does not meet the CALS MIL-D-28003 specification.

8. Conclusions and Recommendations

In summary, the tape from Northrop Corporation was correct. The tape could be read properly using all of the tape reading utilities available in the AFCTB. The physical structure of the tape meets the CALS MIL-STD-1840A requirements.

The IGES file meets the CALS MIL-D-28000A specification.

The DTD and text files have many errors and do not meet the CALS MIL-M-28001A specification.

The Raster file was a Type II file which cannot be evaluated in the AFCTB.

The included CGM could not be read using any tool in the AFCTB and therefore does not meet the CALS MIL-D-28003 specification.

The tape submitted by Northrop Corporation does not meet CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

```
Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Mar 16 08:43:28 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/tapetool8/Set072

                                                                    Page: 1
```

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D002	Document Declaration	D/00260	02048/000001	Extracted
D001T001	Text	D/00260	02048/000004	Extracted
D001G002	DTD	D/00260	02048/000001	Extracted
D001H003	Output Specification	D/00260	02048/000013	Extracted
D002T001	Text	D/00260	02048/000003	Extracted
D002C002	CGM	F/00080	00800/000006	Extracted
D002R003	Raster	F/00128	02048/000018	Extracted
D002Q004	IGES	F/00080	02000/000012	Extracted
D002G005	DTD	D/00260	02048/000010	Extracted
D002H006	Output Specification	D/00260	02048/000061	Extracted

```
Catalog Process terminated normally.
```

9.2 Tape Evaluation Log

```
Air Force CALS Test Network Tape Evaluation - Version 1.2; Release Number 8
  Standards referenced:
    ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Mar 16 08:43:12 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1ITDS01                CONTROLLER                                        4

  Label Identifier: VOL1
  Volume Identifier: ITDS01
  Volume Accessibility:
  Owner Identifier:
  Label Standard Version: 4

HDR1D001             ITDS0100010001000100 93060 93060 000000  CONTROLLER

  Label Identifier: HDR1
  File Identifier: D001
  File Set Identifier: ITDS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0001
  Generation Version Number: 00
  Creation Date:  93060
  Expiration Date:  93060
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:   CONTROLLER

HDR2D0204800260                                  00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00
```

********** Tape Mark **********

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

********** Tape Mark **********

EOF1D001 ITDS0100010001000100 93060 93060 000001 CONTROLLER

Label Identifier: EOF1
File Identifier: D001
File Set Identifier: ITDS01
File Section Number: 0001
File Sequence Number: 0001
Generation Number: 0001
Generation Version Number: 00
Creation Date: 93060
Expiration Date: 93060
File Accessibility:
Block Count: 000001
Implementation Identifier: CONTROLLER

EOF2D0204800260 00

Label Identifier: EOF2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

********** Tape Mark **********

HDR1D002 ITDS0100010002000100 93060 93060 000000 CONTROLLER

Label Identifier: HDR1
File Identifier: D002
File Set Identifier: ITDS01
File Section Number: 0001
File Sequence Number: 0002
Generation Number: 0001
Generation Version Number: 00
Creation Date: 93060
Expiration Date: 93060
File Accessibility:
Block Count: 000000

```
  Implementation Identifier:   CONTROLLER

HDR2D0204800260                                    00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 1.

************ Tape Mark ***************

EOF1D002            ITDS0100010002000100 93060 93060 000001  CONTROLLER

  Label Identifier: EOF1
  File Identifier: D002
  File Set Identifier: ITDS01
  File Section Number: 0001
  File Sequence Number: 0002
  Generation Number: 0001
  Generation Version Number: 00
  Creation Date:  93060
  Expiration Date:  93060
  File Accessibility:
  Block Count: 000001
  Implementation Identifier:   CONTROLLER

EOF2D0204800260                                    00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

                          <<<<< PART OF LOG REMOVED HERE >>>>>

************ Tape Mark ***************
```

```
HDR1D002H006          ITDS0100010011000100 93060 93060 000000  CONTROLLER

  Label Identifier: HDR1
  File Identifier: D002H006
  File Set Identifier: ITDS01
  File Section Number: 0001
  File Sequence Number: 0011
  Generation Number: 0001
  Generation Version Number: 00
  Creation Date:  93060
  Expiration Date:  93060
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:    CONTROLLER

HDR2D0204800260                                    00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 61.

************ Tape Mark ***************

EOF1D002H006          ITDS0100010011000100 93060 93060 000061  CONTROLLER

  Label Identifier: EOF1
  File Identifier: D002H006
  File Set Identifier: ITDS01
  File Section Number: 0001
  File Sequence Number: 0011
  Generation Number: 0001
  Generation Version Number: 00
  Creation Date:  93060
  Expiration Date:  93060
  File Accessibility:
  Block Count: 000061
  Implementation Identifier:    CONTROLLER

EOF2D0204800260                                    00
```

```
  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

************ Tape Mark ***************

############ End of Volume ITDS01 ###############

############ End Of Tape File Set ###############

Deallocating /dev/rmt0...

Tape Import Process terminated with 0 error(s), 0 warning(s),
and 0 note(s).
```

9.3 Tape File Set Validation Log

```
Air Force CALS Test Network File Set Evaluation - Version 1.2; Release Number 8
  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Tue Mar 16 08:43:28 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set072

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: John P. Kent, ITDS Chief Engineer, Northrop Corporation, B-2 Division, L591/GK
E. Washington Blvd., Pico Rivera, CA 90660-3765 (310) 948-0624
srcdocid: ERROR_REPORT
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930301
dstsys: Jeff Fisher, Integration Manager, USAF CALS Test Bed, HQ AFMC (I)/ENCT,
TechneCenter, 4027 Col. Glenn Highway, Dayton, OH 45431-1601
dstdocid: ERROR_REPORT
dstrelid: NONE
dtetrn: 19930301
dlvacc: NONE
filcnt: T1, H1, G1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: DOCUMENT IMPROVEMENT REPORT
docttl: Error Report

Found file: D001T001
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: ERROR_REPORT
dstdocid: ERROR_REPORT
txtfilid: W
doccls: UNCLASSIFIED
notes: NONE

Saving Text Header File: D001T001_HDR
Saving Text Data File: D001T001_TXT
```

Found file: D001G002
Extracting DTD Header Records...
Evaluating DTD Header Records...

srcdocid: ERROR_REPORT
dstdocid: ERROR_REPORT
notes: NONE

Saving DTD Header File: D001G002_HDR
Saving DTD Data File: D001G002_DTD

Found file: D001H003
Extracting Output Specification Header Records...
Evaluating Output Specification Header Records...

srcdocid: ERROR_REPORT
dstdocid: ERROR_REPORT
notes: NONE

Saving Output Specification Header File: D001H003_HDR
Saving Output Specification Data File: D001H003_OS

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

Found file: D002

srcsys: John P. Kent, ITDS Chief Engineer, Northrop Corporation, B-2 Division, L591/GK E. Washington Blvd., Pico Rivera, CA 90660-3765 (310) 948-0624
srcdocid: LOCAL_DIRECTIVE
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930301
dstsys: Jeff Fisher, Integration Manager, USAF CALS Test Bed, HQ AFMC (I)/ENCT, TechneCenter, 4027 Col. Glenn Highway, Dayton, OH 45431-1601
dstdocid: LOCAL_DIRECTIVE
dstrelid: NONE
dtetrn: 19930301
dlvacc: NONE

```
filcnt: T1, H1, G1, C1, Q1, R1
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: DIRECTIVE
docttl: Test of local directives

Found file: D002T001
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: LOCAL_DIRECTIVE
dstdocid: LOCAL_DIRECTIVE
txtfilid: W
doccls: UNCLASSIFIED
notes: NONE

Saving Text Header File: D002T001_HDR
Saving Text Data File: D002T001_TXT
```

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

```
Found file: D002H006
Extracting Output Specification Header Records...
Evaluating Output Specification Header Records...

srcdocid: LOCAL_DIRECTIVE
dstdocid: LOCAL_DIRECTIVE
notes: NONE

Saving Output Specification Header File: D002H006_HDR
Saving Output Specification Data File: D002H006_OS

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D002.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.
```

10. Appendix B - Detailed IGES Analysis

10.1 File One

10.1.1 Parser/Verifier Log

```
          *** IGES DATA FILE ANALYSIS ***
          ***       MARCH 1992       ***
          ***   IGES Data Analysis   ***
          ***     (708) 449-3430     ***

 Input file is /mnt/Set072/D002/D002Q004_IGS
 Checking conformance to CALS Class I (MIL-D-28000A 2/10/92)
 Today is March 16, 1993  11:07 AM

*** File and Product Name Information ***

   File name from sender     = 'Q004.iges'
   File creation Date.Time   = '930301.192405'
   Model change Date.Time    = ''
   Author                    = 'tom'
   Department                = 'GRAPHICS'
   Product name from sender  = 'Q004.iges'
   Destination product name  = 'Q004.iges'

*** Parameter Delimiters ***

   Delimiter  = ','
   Terminator = ';'

*** Originating System Data ***

   System ID              = 'ITDS CONVERTER: GEF_IGES'
   Preprocessor version   = '1.0'
   Specification version  = 6 (IGES 4.0)

*** Precision levels ***
   Integer bits =    32
   Floating point  -  Exponent =    38  Mantissa =     6
   Double precision - Exponent =   308  Mantissa =    15

*** Global Model Data ***

   Model scale            =  1.0000E+00
```

```
   Unit flag                 =  1
   Units                     =  'IN'
   Line weights              =  3
   Maximum line thickness    =  1.152632E-02
   Minimum line thickness    =  3.842107E-03
   Granularity               =  1.000000E-03
   Maximum coordinate        =  2.954101E+00

   Drafting standard applicable to original data is not specified.

*** Status Flag Summary ***

 Blank status:  Visible                        41
                Blanked                         0

 Independence:  Independent                    39
                Physically Subordinate          0
                Logically Subordinate           2
                Totally Subordinate             0

 Entity use:    Geometry                       39
                Annotation                      2
                Definition                      0
                Other                           0
                Logical/Positional              0
                2D parametric                   0
                Not Specified                   0

 Hierarchy:     Structure DE applies           0
                Subordinate DE applies        41
                Hierarchy property applies     0
                Not Specified                  0

*** Entity Occurrence Counts ***

 Entity    Form    Level     Count     Type
 ------    ----    -----     -----     ----

   106       11        0        24     Copious data - Piecewise planar, linear string(2D
   path)
   106       63        0         8     Simple closed planar curve
   110        0        0         6     Line
   404        0        0         1     Drawing
   406       16        0         1     Property - Drawing size
   410        0        0         1     View - Orthographic parallel

*** Entity Count by Level ***
```

Level	Count
0	41

*** Labeling Information ***

0% of the entities are labeled.

Unlabeled 41

*** Line Fonts Used in Data ***

100	102	104	106	108	110	112	114	
-	-	-	-	-	-	-	-	Undefined
-	-	-	32	-	6	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

116	118	120	122	124	125	126	128	
-	-	-	-	-	-	-	-	Undefined
-	-	-	-	-	-	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

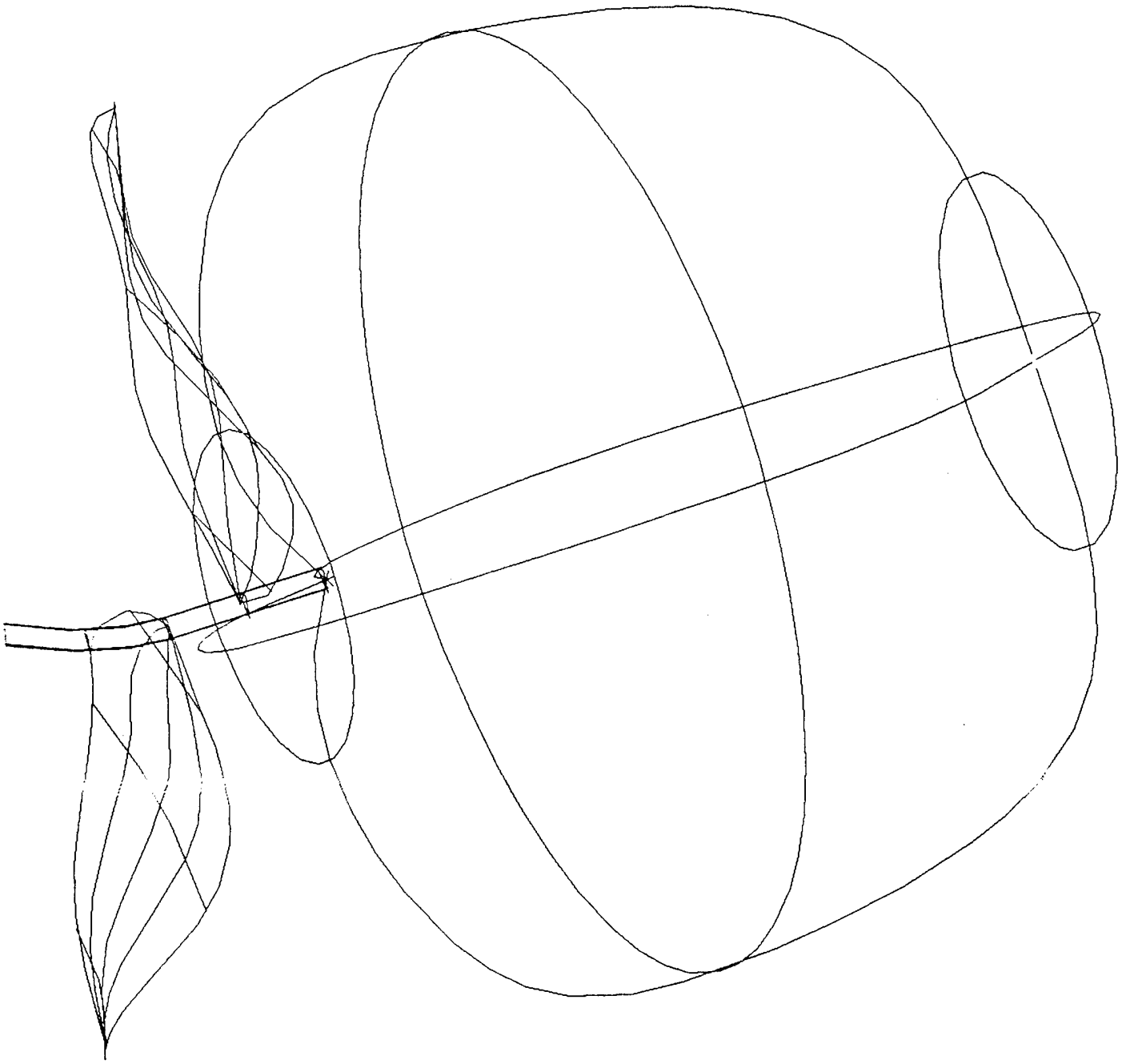
130	132	134	136	138	140	142	144	
-	-	-	-	-	-	-	-	Undefined
-	-	-	-	-	-	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	-	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined

*** Line Widths Used in Data ***

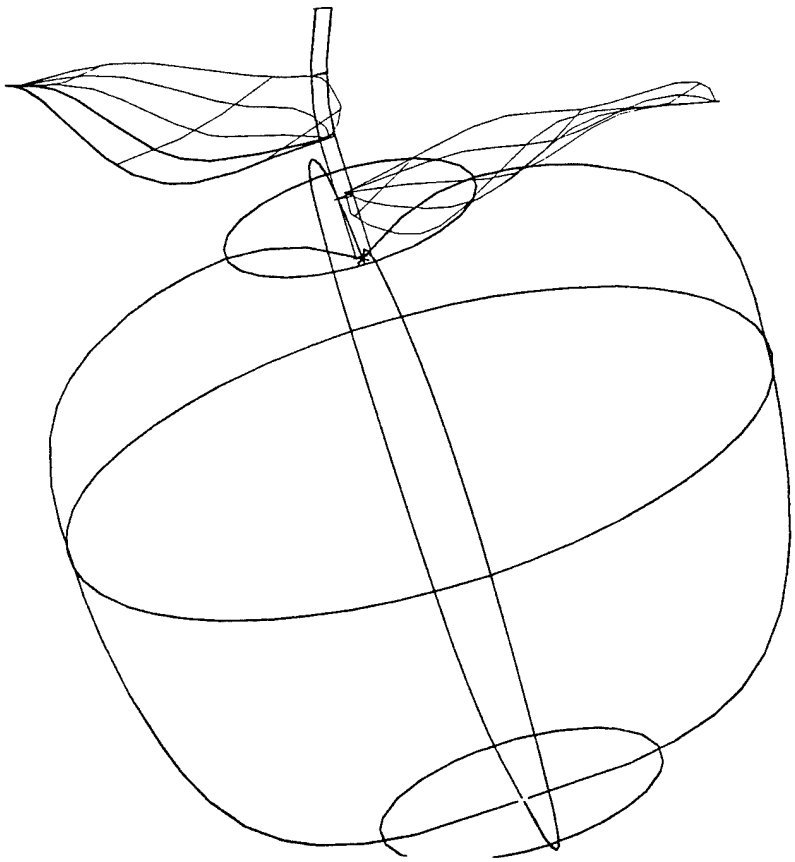
Weight	Count	Width
Defaulted	31	(0.0038)

```
      2          10       (0.0077)

 *** Colors Used in Data ***

  Defaulted        3
        Red        8
      Green       30

 *********************************
 ******  ENTITY ANALYSIS  ******
 *********************************

 *** Entity type: 106

 *** Entity type: 110

  --      6 lines averaging 1.362447E-01 units --

 *** Entity type: 404

Drawing at D       5 contains 1 views.
Drawing at D       5 contains 0 annotation entities.

 *** Entity type: 406

 *** Entity type: 410

  Scale of view at D       1 is 1.000000E+00.
Orthographic View entity at D       1 has  0 clipping planes specified.
   XMIN = Not Set        XMAX = Not Set
   YMIN = Not Set        YMAX = Not Set
   ZMIN = Not Set        ZMAX = Not Set

 *** Message Summary ***

 *** Error Summary ***

     0 fatal errors
     0 severe errors
     0 errors
     0 warnings
     0 cautions
     0 nitpicks
     0 notes

 *** End of Analysis of /mnt/Set072/D002/D002Q004_IGS ***
```

10.1.2 Output Cadkey v5.02

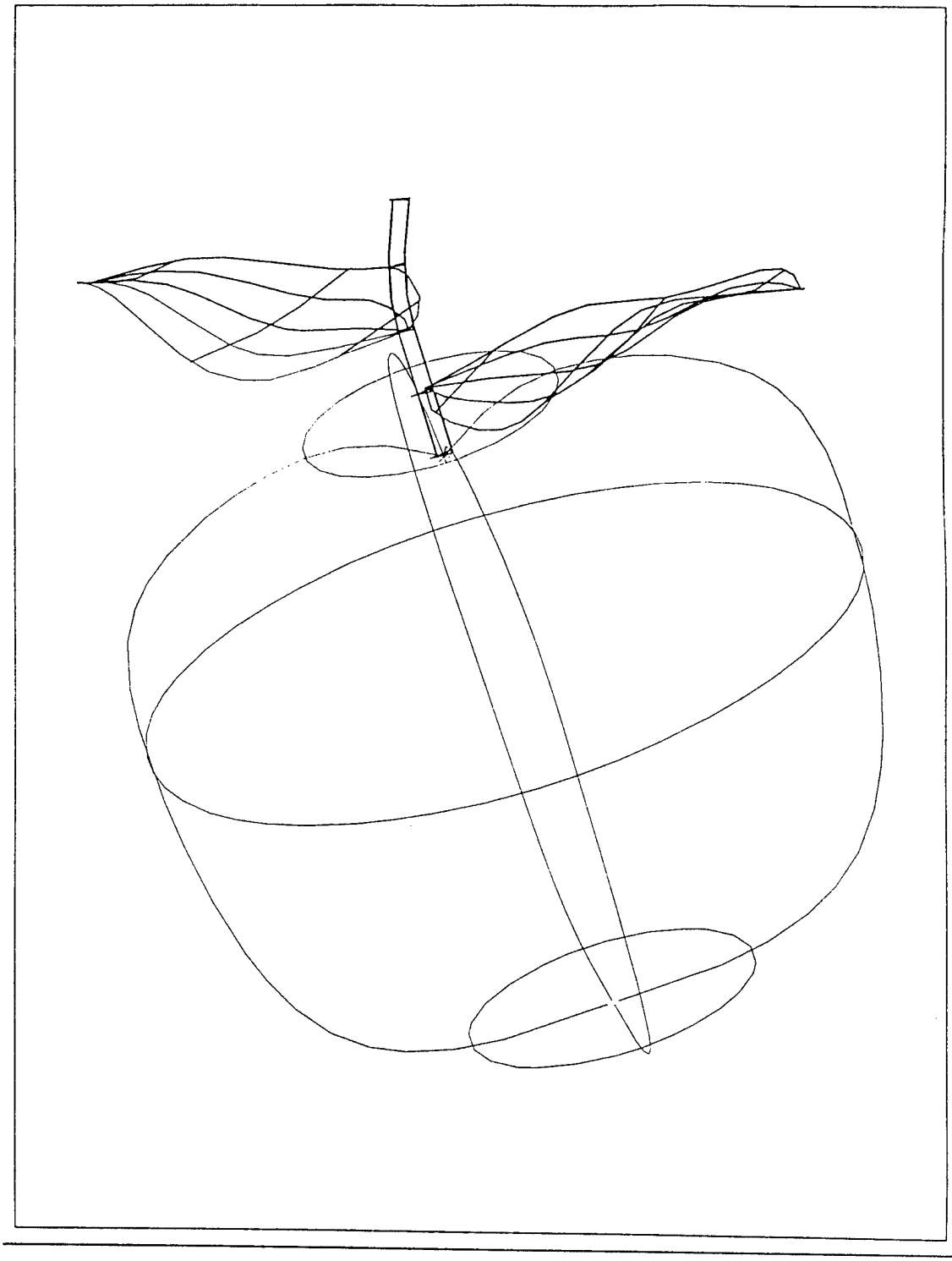


10.1.3 Output IGESView



10.1.4 Output iges2draw/IslandDraw

10.1.5 Output IGESWork



11. Appendix C - Detailed SGML Analysis

11.1 Exoterica Parser

11.1.1 Document One - DTD Log

```
<!DOCTYPE doc [

<!ELEMENT doc - - (front,body,closing) +(viewdef)>
<!ATTLIST doc
  branch    CDATA #IMPLIED
  docid    NMTOKEN #IMPLIED
  fosicite CDATA #REQUIRED>

<!ELEMENT viewdef - o (viewport+)>

<!ELEMENT viewport - o EMPTY>
<!ATTLIST viewport
          name              ID       #REQUIRED
          viewstyleid       NMTOKEN  #IMPLIED
          coord             CDATA    #IMPLIED>

<!ELEMENT front - o (a11|a12|a21|a22|a23|a24|a25|a26|a27|a28|
                     a31|a32|a33|a34|a35|a41|a42|a43|a44|a45|a51|a52|a53|
                     a54|a55|a61|a71|a72|a73|a81|a82|a82a|a82b|a83|a84|
                     a91|a92|a93|a94|a95|a96|a97|a98|a99|aA1|aA2|aA3|aA4|
                     aA5|aA6|aA7|aA8|aA9|aAA|aAB|aB1|aB2|aB3|aB4|aB5|aB6|
                     aC1|aC2|aC3|aC4|aC5|aC6|aC7|aC8|aC9|aD1|aD2|aD3|aE1|
                     aF1|aF2|aF3)+>

<!ELEMENT (a11|a12|a21|a22|a23|a24|a25|a26|a27|a28|a31|a32|a33)
- o (#PCDATA)>
<!ELEMENT (a34|a35|a41|a42|a43|a44|a45|a51|a52|a53|a54|a55|a61|a71|a72|
           a73|a81|a82|a82a|a82b|a83|a84|a91|a92|a93|a94|a95|a96|a97|a98) - o  (#PCDAT
<!ELEMENT (a99|aA1|aA2|aA3|aA4|aA5|aA6|aA7|aA8|aA9|aAA|aAB|aB1|aB2|aB3|
           aB4|aB5|aB6|aC1|aC2|aC3|aC4|aC5|aC6|aC7|aC8|aC9|aD1|aD2|aD3|
           aE1|aF1|aF2|aF3) - o  (#PCDATA)>

<!ELEMENT body - o (#PCDATA)>

<!ELEMENT closing - o (#PCDATA)>

]>
```

11.1.2 Document Two - DTD Log

```
C:\XGML\XGMLNORM.EXE --
Error on line 466 in file entities/93222.dtd:
A content model is ambiguous.
For element 'TOC'.  The input is 'CONTENTSENTRY'.
<!-- The document prolog is in error. -->
```

11.1.3 Document Two - Text File

```
C:\XGML\XGMLNORM.EXE --
Error on line 30 in file i:\9322\d002t001:
Unexpected start tag encountered.
The start tag is for element 'PARA'.
The current element is 'NOTICE'.
End tags for the following elements are allowed:  'NOTICE', 'IDINFO',
'FRONT'.
Start tags for the following elements are allowed:  'APPLICABIL',
'APPLICDEF', 'BODY', 'CHANGE', 'CHGNUM', 'DEFLIST', 'EMPHASIS',
'EXTREF', 'FOREWORD', 'GRAPHIC', 'HCI', 'HCP', 'ILLUSLIST', 'LEPS',
'NOTICE', 'OCP', 'PUBDATE', 'RANDLIST', 'REVNUM', 'SEQLIST',
'TABLELIST', 'TOC', 'XREF'.
Start tags for the following inclusions are allowed:  'BRK', 'HRULE',
'PGBRK'.
Text is allowed.
The element 'PARA' will be treated as an inclusion.

C:\XGML\XGMLNORM.EXE --
Error on line 33 in file i:\9322\d002t001:
Unexpected start tag encountered.
The start tag is for element 'PARA'.
The current element is 'NOTICE'.
End tags for the following elements are allowed:  'NOTICE', 'IDINFO',
'FRONT'.
Start tags for the following elements are allowed:  'APPLICABIL',
'APPLICDEF', 'BODY', 'CHANGE', 'CHGNUM', 'DEFLIST', 'EMPHASIS',
'EXTREF', 'FOREWORD', 'GRAPHIC', 'HCI', 'HCP', 'ILLUSLIST', 'LEPS',
'NOTICE', 'OCP', 'PUBDATE', 'RANDLIST', 'REVNUM', 'SEQLIST',
'TABLELIST', 'TOC', 'XREF'.
Start tags for the following inclusions are allowed:  'BRK', 'HRULE',
'PGBRK'.
Text is allowed.
The element 'PARA' will be treated as an inclusion.
```

```
C:\XGML\XGMLNORM.EXE --
Error on line 36 in file i:\9322\d002t001:
Unexpected start tag encountered.
The start tag is for element 'PARA'.
The current element is 'NOTICE'.
End tags for the following elements are allowed:  'NOTICE', 'IDINFO',
'FRONT'.
Start tags for the following elements are allowed:  'APPLICABIL',
'APPLICDEF', 'BODY', 'CHANGE', 'CHGNUM', 'DEFLIST', 'EMPHASIS',
'EXTREF', 'FOREWORD', 'GRAPHIC', 'HCI', 'HCP', 'ILLUSLIST', 'LEPS',
'NOTICE', 'OCP', 'PUBDATE', 'RANDLIST', 'REVNUM', 'SEQLIST',
'TABLELIST', 'TOC', 'XREF'.
Start tags for the following inclusions are allowed:  'BRK', 'HRULE',
'PGBRK'.
Text is allowed.
The element 'PARA' will be treated as an inclusion.

C:\XGML\XGMLNORM.EXE --
Error on line 40 in file i:\9322\d002t001:
Unexpected start tag encountered.
The start tag is for element 'PARA'.
The current element is 'NOTICE'.
End tags for the following elements are allowed:  'NOTICE', 'IDINFO',
'FRONT'.
Start tags for the following elements are allowed:  'APPLICABIL',
'APPLICDEF', 'BODY', 'CHANGE', 'CHGNUM', 'DEFLIST', 'EMPHASIS',
'EXTREF', 'FOREWORD', 'GRAPHIC', 'HCI', 'HCP', 'ILLUSLIST', 'LEPS',
'NOTICE', 'OCP', 'PUBDATE', 'RANDLIST', 'REVNUM', 'SEQLIST',
'TABLELIST', 'TOC', 'XREF'.
Start tags for the following inclusions are allowed:  'BRK', 'HRULE',
'PGBRK'.
Text is allowed.
The element 'PARA' will be treated as an inclusion.
```

11.2 SGML Parser Logs

11.2.1 Document One - DTD Log

```
sgmls: SGML error at 9322.dtd, line 20 in declaration parameter 4:
       Content model token 33: more than GRPCNT model group tokens; terminated
sgmls: SGML error at 9322.dtd, line 26 at "<":
       Invalid character(s) ignored; attempting to resume DOCTYPE subset
sgmls: SGML error at 9322.dtd, line 33 in declaration parameter 2:
       Minimization must be "-" or "O" (not "F2"); declaration terminated
sgmls: SGML error at 9322.dtd, line 36 at "<":
       Invalid character(s) ignored; attempting to resume DOCTYPE subset
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA1" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA2" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA3" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA4" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA5" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA6" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA7" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA8" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AA9" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AB1" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AAA" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AB2" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AAB" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AB3" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AB4" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AB5" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
```

```
       Element "AB6" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC1" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC2" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC3" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC4" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC5" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC6" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC7" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC8" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AC9" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AD1" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AD2" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AD3" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AE1" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "AF1" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "A99" used in DTD but not defined
sgmls: Warning at 9322.err, line 1 at record start:
       Element "FRONT" used in DTD but not defined

TOTALCAP  2048/200000
 ELEMCAP  1536/200000
  GRPCAP   256/200000
EXGRPCAP    32/200000
 EXNMCAP    32/200000
  ATTCAP   192/200000
```

11.2.2 Document Two - DTD Log

```
sgmls: Error at 93222.dtd, line 24 in declaration parameter 5:
       Could not find external general entity "apple2d.igs"
sgmls: Error at 93222.dtd, line 25 in declaration parameter 5:
       Could not find external general entity "cals.cgm"
sgmls: Error at 93222.dtd, line 26 in declaration parameter 5:
       Could not find external general entity "test1.ras"
sgmls: SGML error at 93222.dtd, line 468 in declaration parameter 4:
       Content model is ambiguous

TOTALCAP 51477/200000
  ENTCAP  7648/200000
ENTCHCAP  3873/200000
 ELEMCAP  3456/200000
  GRPCAP 20256/200000
EXGRPCAP   256/200000
 EXNMCAP   544/200000
  ATTCAP 10752/200000
ATTCHCAP   296/200000
AVGRPCAP  3840/200000
  NOTCAP   192/200000
NOTCHCAP   364/200000
```

11.2.3 Document Two - Text Log

```
sgmls: Error at 93222.dtd, line 24 in declaration parameter 5:
       Could not find external general entity "apple2d.igs"
sgmls: Error at 93222.dtd, line 25 in declaration parameter 5:
       Could not find external general entity "cals.cgm"
sgmls: Error at 93222.dtd, line 26 in declaration parameter 5:
       Could not find external general entity "test1.ras"
sgmls: SGML error at 93222.dtd, line 468 in declaration parameter 4:
       Content model is ambiguous
sgmls: SGML error at i:\9322\d002t001, line 30 at ">":
       BODY start-tag implied by PARA start-tag; not minimizable
       Element structure: DOC
sgmls: SGML error at i:\9322\d002t001, line 30 at ">":
       PARA element not allowed at this point in BODY element
       Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 32 at ">":
       NOTICE element not allowed at this point in BODY element
       Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 33 at ">":
```

```
        PARA element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 35 at ">":
        NOTICE element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 36 at ">":
        PARA element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 39 at ">":
        NOTICE element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 40 at ">":
        PARA element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 42 at ">":
        NOTICE element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 44 at ">":
        PUBDATE element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 46 at ">":
        BODY element not allowed at this point in BODY element
        Element structure: DOC BODY
sgmls: SGML error at i:\9322\d002t001, line 82 at """:
        BOARDNO = "cals.cgm" ENTITY attribute not general entity; may affect processing
        Element structure: DOC BODY BODY CHAPTER GENPROC TASK STEP1 RESULT FIGURE
sgmls: SGML error at i:\9322\d002t001, line 109 at """:
        BOARDNO = "test1.ras" ENTITY attribute not general entity; may affect processin
        Element structure: DOC BODY BODY CHAPTER GENPROC TASK STEP1 PARA FIGURE
sgmls: SGML error at i:\9322\d002t001, line 122 at """:
        BOARDNO = "apple2d.igs" ENTITY attribute not general entity; may affect process
        Element structure: DOC BODY BODY CHAPTER GENPROC TASK STEP1 PARA FIGURE
sgmls: SGML error at i:\9322\d002t001, line 125 at ">":
        BODY element ended prematurely; required subelement omitted
        Element structure: DOC BODY

TOTALCAP 52117/200000
  ENTCAP  7648/200000
ENTCHCAP  3873/200000
 ELEMCAP  3456/200000
  GRPCAP 20256/200000
EXGRPCAP   256/200000
 EXNMCAP   544/200000
  ATTCAP 10752/200000
ATTCHCAP   296/200000
AVGRPCAP  3840/200000
  NOTCAP   192/200000
```

NOTCHCAP	364/200000
IDCAP	160/200000
IDREFCAP	480/200000